

ABSTRACT

To provide a reflective or a transmissive polymer-dispersed liquid crystal display element with high luminance, high contrast and superior display quality, a reflective polymer-dispersed liquid crystal display element having a polymer-dispersed liquid crystal layer 104 in which liquid crystal drops 112 are dispersed in a polymer 111 as well as a reflective pixel electrode 105 satisfies $50\exp(-0.4d) < SG < 360\exp(-0.47d)$, wherein d is the thickness of the polymer-dispersed liquid crystal layer 104 and SG is the scattering gain.

Furthermore, a surface of a reflector is provided with protrusions that are substantially stripe-shaped and oblong in a vertical direction of the display screen, and whose curvature in a horizontal direction of the display screen is larger than the curvature in a vertical direction. That is to say, incident light is to some degree reflected somewhat diffusely, and incident light is scattered anisotropically, such that the scattering degree is larger in horizontal direction than in vertical direction.

Furthermore, the display element has voltage - luminance characteristics, in which the luminance first rises from an initial level as the voltage applied on the liquid crystal layer increases from 0V, reaches a peak is at a voltage V_p , and then decreases toward a voltage V_2 to a level of approximately zero. The range between V_p and V_2 is taken as the driving voltage range.